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| 10/679,858 | 10/06/2003 | Keith S. Radcliffe | IO-1090US | 3186 |

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| EXAMINER | |
|---|---|
| BARON, HENRY | |
| **ART UNIT** | **PAPER NUMBER** |
| 2416 | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| | | | |
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| ***Office Action Summary*** | **Application No.**<br>10/679,858 | **Applicant(s)**<br>RADCLIFFE ET AL. | |
| | **Examiner**<br>HENRY BARON | **Art Unit**<br>2416 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *04 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-9 and 11-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 11-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## *Detailed Action*

## Wireless communication method, system and apparatus

### *Response to Arguments/Remarks*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/04/2008 has been entered.

2. Claims 1 – 9, and 11 – 39 are pending in the application with claims 37 – 39 new.

3. Applicant's arguments filed 11/04/2008 have been fully considered but they are not persuasive.

4. Applicant argues with respect to claim 32, that though Examiner states that Sorenson as modified by Flinck does not disclose where the system is asynchronous and messages are prioritized to provide the synchronous communication over the asynchronous system Applicant argues that Brenner is also deficient in teaching this element.

5. Brenner is cited as teaching

A CSMA protocol works as follows: A station desiring to transmit senses the medium, if the medium is busy (i.e. some other station is transmitting) then the station will defer its transmission to a later time, if the medium is sensed free then the state is allowed to transmit.

6. Examiner replies that Brenner was cited based on guidance given by the Applicant with regards to asynchronous communications.

7. In particular, Applicant states in ¶ [0085]

‘ [i]n an asynchronous system, any node can begin communicating, or transmitting at any time. When two or more nodes transmit at the same time, the messages can, and will, become corrupt and the data being transmitted can be lost.’

8. Brenner is cited to teach this ‘asynchronous’ limitation since this is precisely what occurs when a node tries to transmit is a collision sense multiple access (CDMA) (also known within the art as the

Ethernet protocol) i.e. A station desiring to transmit senses the medium, if the medium is busy (i.e. some other station is transmitting) then the station will defer its transmission to a later time. By extension of this definition, synchronous communication occurs when ' .. a later time, if the medium is sensed free then the state is allowed to transmit.' As is known in the art, messages are queued or buffered, where the message at the top of the queue, with intrinsically higher priority, being transmitted first.

9. Applicant argues with regards to claim 1, Flinck does not cure the deficiency of Sorenson, as Flinck discloses a method of load balancing the processing of requests for address information associated with a gateway and therefore does not teach of load balancing of data to be routed across the network. Applicant recites Flinck ¶ [0066] to support this assertion

10. Examiner does not agree. First, Examiner is unable find support of Applicant's assertion in ¶ [0066]. Examiner cites Flinck ¶ [0012] as teaching a method for load balancing in an ad hoc network, and implicitly since data is routed within a network, the load balancing of data to be routed across the network.

## *Claim Rejections - 35 USC § 103*

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1 – 9, 12 – 15, and 18 – 31, are rejected under 35 U.S.C. 102(e) as being unpatentable over by Sorensen (U.S. Patent Application 2002/0061009) in view of Flinck (U.S. Patent Application 20030018774).

13. Regarding claims 1, 7, 13, and 30 – 31, Sorenson teaches of a wireless communication system, a method of wireless communications, and a wireless communication apparatus comprised of nodes (Abstract), with; a) a serverless physical layer, (3: [0032], read ad-hoc), b) a virtual layer (3: [0033], read

second node determines whether to establish the connection between the first node and the second node based upon the comparison); and c) an application layer comprising a plurality of independently operating applications. (Figure 5 and 1: [0012]). The wireless communication system taught by Sorensen can be used for applications such as seismic data acquisition of nodes, the network comprised of nodes. (see Figure 6).

14. Sorenson, however, does not disclose where load balancing is used to route data over the system.

15. Flinck teaches where load balancing is used to route data over the system. (2: [0012] a method and system for load balancing in ad hoc networks).

16. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Sorenson with Flinck.

17. With this modification, congestion is mitigated across a link or set of links as the load is more evenly distributed through load balancing, thus improving the overall network connectivity.

18. With regards to claims 2, 8, and 14, Sorenson further teaches the nodes being comprised of a protocol layer (2: [0017], read NAL); a Media Access Control layer (4: [0047], read Bluetooth MAC address); and a Hardware Abstraction layer (Figure 5, e.g. LMP and L2CAP layers as HAL).

19. Regarding claims 3 – 4, 9, and 15, Sorenson teaches of the application layer comprised of configuration software that is operable on several layers (5: [0063] according to yet another aspect, an electronic device adapted to communicate in an ad-hoc network and to determine whether to establish a connection with another node of the ad-hoc network includes a transceiver that receives a first message transmitted from the other node, the first message including a network identifier and a point of attachment identifier) and where at least one independently operating application migrates between nodes. (2: [0019] ).

20. With regards to claims 5, 12, and 18, Sorenson teaches in (4: [0050-0052]) the concept of Administrative Domain Identifier (ADI), which is unique for distinct networks. The ADIs represent a Virtual ID from which Virtual LANs (or Administrative Domains) are formed.

21. Regarding claim 6, Sorenson teaches of a system comprising a protocol layer for dynamically adjusting information routing paths between nodes as discussed in (5: [0057]) where it is feasible to perform IP routing, or some other higher-level interconnection mechanism in a node being connected to two distinct Administrative Domains.

22. With regards to claims 19 and 20, Sorenson teaches (1: [0019]) that Bluetooth provides wireless, ad hoc networking between laptop computers, which provide to Bluetooth a physical layer interface.

23. In view of claims 21 and 26, Sorenson teaches of a multi-node data handling system and a method of handling data in a multi-node system comprising of nodes in wireless communication network where a first node has a physical layer including a wireless communication device for receiving information in the form of data packets from at least a second node. (3: [0033]) and the first node further includes a computing device (3: [0035-36]) implementing a virtual layer comprising a Virtual LAN (3: [0033] and (4: [0046] read VLAN as administrative domain); further in (3: [0036]) Sorenson teaches of an application layer comprising one or more computer-readable programs that can receive from the virtual layer only those data packets utilized by the applications layer and uses computer-readable programs to process the data packets received by the application layer.

24. Sorenson, however, does not disclose where load balancing is used to route data over the system.

25. Flinck teaches where load balancing is used to route data over the system. (2: [0012] read there is provided a method and system for load balancing in ad hoc networks).

26. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Sorenson with Flinck.

27. With this modification, congestion is mitigated across a link or set of links as the load is more evenly distributed through load balancing, thus improving the overall network connectivity.

28. With regards to claim 22 and 27, Sorenson teaches of a multi-node data handling system and a method of handling data in a multi-node system, the nodes being comprised of a protocol layer (2: [0017], read NAL); a Media Access Control layer (4: [0047], read Bluetooth MAC address); and a Hardware Abstraction layer (Figure 5, e.g. LMP and L2CAP layers).

29. Regarding claims 23 – 24, and 28, Sorenson teaches a multi-node data handling system and a method of handling data in a multi-node system with an application layer comprised of configuration software that is operable on several layers (5: [0063]) and where at least one independently operating application migrates between nodes. (2: [0019]).

30. With regards to claims 25 and 29, Sorenson teaches in (4: [0050-0052]) the concept of Administrative Domain Identifier (ADI), which is unique for distinct networks. The ADIs represent a Virtual ID from which Virtual LANs (or Administrative Domains) can be formed.

31. Claims 16 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorensen, (U.S. Patent Application 2002/0061009) in view of Murto et al. (U.S. Patent Application US 20040213409), hereafter Murto.

32. In consideration of claims 16 and 39, Sorenson teaches of a wireless communication apparatus comprised of nodes (Abstract), with; a) a serverless physical layer, (3: [0032], read ad-hoc), b) a virtual layer (3: [0033], read second node determines whether to establish the connection between the first node and the second node based upon the comparison); and c) an application layer comprising a plurality of independently operating applications. (Figure 5 and 1: [0012]).

33. However, Sorenson does not specifically teach of a GPS receiver as an embodiment of application layer.

34. Murto teaches of a Global Positioning Satellite (GPS) Wireless Application Protocol (WAP) (3: [0037] and Figure 1) used in conjunction with a Universal Description, Discovery and Integration (UDDI) registry that enables users to quickly, easily and dynamically find businesses and services on the Internet.

35. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to modify the ad-hoc wireless teachings of Sorenson to include the GPS Wireless Application Protocol (WAP) teachings of Murto and the load balancing teachings of with Flinck.

36. The addition of a GPS Wireless Application Protocol (WAP) would provide ad-hoc users with a means to dynamically locate Internet registered businesses and services in their environment over a load balanced network. This would make a subscription to the ad-hoc wireless service even more attractive.

37. Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorensen, (U.S. Patent Application 2002/0061009) in further view of Zhang, Second International Conference on Mobile Data Management, pg 233-234, Introduction, Hong Kong in January 2001, hereafter Zhang.

38. In the case of claims 11 and 17, Sorenson teaches of a routing mechanism to route packets within a scatternet stating that there are several ad-hoc routing protocols for this purpose. (2: [0017]).

39. However, Sorenson is silent with regards to a communication routing table that can dynamically change geometries of node positions to direct communication routes.

40. Sorenson and Zhang, however, do not disclose where load balancing is used to route data over the system.

41. Flinck teaches where load balancing is used to route data over the system. (2: [0012] read there is provided a method and system for load balancing in ad hoc networks).

42. By contrast, Zhang teaches communication routing tables that can dynamically change geometries of node positions to direct communication routes are used in ad-hoc networks.

43. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to modify the ad-hoc wireless teachings of Sorenson to include Zhang's routing tables that can dynamically change geometries of node positions and Flinck's load balancing.

44. Such a modification would be beneficial, as it would allow users seem-less mobility and location flexibility over a load balanced network.

45. Claims 32 – 37 are rejected under 35 U.S.C. 102(e) as being unpatentable over by Sorensen (U.S. Patent Application 2002/0061009) in view of Flinck (U.S. Patent Application 20030018774) and in further view of Brenner, A Technical Tutorial on the IEE 802.11 Protocol, 1997

46. In consideration of claim 32, Sorenson modified teaches the limitations of claim 1, but does not disclose where the system is asynchronous and messages are prioritized to provide the synchronous communication over the asynchronous system.

47. Brenner teaches where the system is asynchronous and messages are prioritized to provide the synchronous communication over the asynchronous system. (Page 5 read Basic Access Method CSMA/CD where in a system in an asynchronous network i.e. collision detects whether the medium is busy, if not then the system transmit i.e. synchronous. The system, at its discretion, can prioritize the messages.).

48. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Sorenson and Flinck with the synchronous communication teachings of Brenner.

49. With regards to claims 33 and 34, Sorenson teaches where the nodes are compartmentalized into logical groups and communication in one logical group does not disturb communication in another logical group. (See Figure 6 read Piconet 1,2,3, etc each as a logical group, and master slave nodes form groups).

50. With regards to claim 35 and 36, Sorenson teaches of a wireless communication system with a generic application architecture can be used in any adaptable applications such as seismic data acquisition and repeater. (see Figure 6) and 3: [0033], read second node determines whether to establish the connection between the first node and the second node based upon the comparison); and c) an application layer comprising a plurality of independently operating applications.)

51. Claims 37 is rejected under 35 U.S.C. 102(e) as being unpatentable over by Sorensen (U.S. Patent Application 2002/0061009) in view of Flinck (U.S. Patent Application 20030018774) and in further view of Cassia (U.S. Patent 5987068).

52. With regards to claim 37, Sorensen modified teaches the limitations of claim 1, but do not disclose where the physical layer comprises heterogeneous communications equipment.

53. Cassia teaches this limitation. (3: [0032] read [a]s shown, the radio communication system 100 includes an enhanced transmitter 110 that has established wireless communication links 101, 102, with heterogeneous communication equipment, including a standard receiver 120, and an enhanced communications capable receiver 130. )

54. It would have been obvious at the time the invention was made to a person of ordinary skill in the art to modify the wireless communication system teachings of Sorensen modified with the heterogeneous communications equipment teachings of Cassia.

55. In this manner, Sorensen's wireless communication system would be able to support at the physical layer heterogeneous communication equipment making it more viable for a wide spectrum of applications.

56. Claims 38 is rejected under 35 U.S.C. 102(e) as being unpatentable over by Sorensen (U.S. Patent Application 2002/0061009) in view of Flinck (U.S. Patent Application 20030018774) and in further view of Castro (U.S. Patent 5987068).

57. With regards to claim 38, Sorensen modified teaches the limitations of claim 1, but do not disclose where at least one of the nodes has multiple virtual node identification.

58. Castro teaches this limitation (5: [0050] read In this implementation, when a node joins the overlay, it is assigned an original node ID in the manner described above. In addition, the node generates one or more virtual node Ids i.e. has multiple virtual node identification, to define virtual nodes (having the same IP address as the joining "real" node). The virtual node IDs for the network nodes share a prefix with the original node ID concatenated with a random number for each parent domain in which the original node participates in load balancing. The network node then joins the structured overlay using its node ID and each of these virtual node IDs by informing other nodes of its existence in the network, including its node IDs (real and virtual) as well as its network (e.g., IP) address and by building its routing table using the similar information from neighboring overlay nodes. )

59. It would have been obvious at the time the invention was made to a person of ordinary skill in the art to modify the wireless communication system teachings of Sorensen modified with the heterogeneous communications equipment teachings of Castro.

60. In this manner, Sorensen's wireless communication system would be able to conserve IP addresses for wireless communication equipment located at a site by generating a set of virtual IDs to address such equipment, and thus make management of sets of wireless communication equipment easier.

## *Conclusion*

61. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Henry Baron whose telephone number is (571) 270-1748. The examiner can normally be reached on 7:30 AM to 5:00 PM E.S.T. Monday to Friday.

62. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

63. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. B./
Examiner, Art Unit 2416
HB

/Brenda Pham/

Primary Examiner, Art Unit 2416